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ABSTRACT

Two telephone surveys of adults living in North Carolina were conducted to determine the effects of various demographic and psychological characteristics on attitudes toward microcomputers. Results indicated that computer experience, income, education, and having children all predicted a positive attitude toward computers. In addition, findings showed that conventional notions about the acceptance of computers only by certain groups (white males in particular) may be oversimplifications. In fact, no difference in attitude on the basis of sex was found, and nonwhites, overall, held more positive attitudes toward computers than did whites. The findings suggest that women and nonwhites will not necessarily be excluded from the process of adopting new technologies. (Auth/FL)

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Psychological and Demographic Predictors of Attitude Toward Micro-Computers: Main Effects and Interactions

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Presented to the Communication Theory and Methodology Division of the Association for Education in Journalism and Mass Communication convention in Gainesville, Fla. (Aug. 1984)

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ABSTRACT

Psychological and Demographic Predictors of Attitude Toward Micro-Computers: Main Effects and Interactions

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(Paper presented to the Communication Theory and Methodology Division of the Association for Education in Journalism and Mass Communication convention, August 6, 1984)

Positive attitudes toward micro-computers were assessed using two samples of adults in North Carolina. Computer experience, income, education and having children all predicted a positive attitude toward computers. More importantly, however, by testing a series of interactions among demographic and psychological variables, it was found that conventional notions about acceptance of computers only by certain demographic groups (white males, in particular), may be over-simplifications. Indeed, no difference in attitude on the basis of sex was found and non-whites, overall, held more positive attitudes toward computers than whites. It was concluded that women and non-whites will not necessarily be excluded from the process of adopting this new technology -- at least not by choice.

PSYCHOLOGICAL AND DEMOGRAPHIC PREDICTORS OF ATTITUDE TOWARD MICRO-COMPUTERS: MAIN EFFECTS AND INTERACTIONS

A common thread in the technological utopias projected by many futurists is the ubiquity and acceptance of computers through society. According to Pelton (1983):

> Home personal computers will eventually be connected to national and international packet-switched computer networks for a wide range of new telecommunications services. Videoconferencing will eventually find its way into the home of the future .... Everything but electronic dating will perhaps become fashionable in information societies." (pp. 54)

Toffler (1980) is even less reserved. He envisions a future where the workplace is extended into homes via the computer network. Such an electronic cottage, he says, "raises once more on a mass scale the possibility of husbands and wives, and perhaps even children, working together as a unit." (pp. 203)

These predictions are based on assumptions that are open to challenge, primary among them that the diffusion of computer technology through all levels of society will be complete and uncontested. Research indicates, however, that this may not be the case. Instead, certain groups are likely to adopt these new communications media with considerably more relish and ease than others. In so doing, a class of "techno-peasants" may be created who are excluded from the information society, not only on an economic, but on an attitudinal basis as well.

Already there is evidence for a syndrome of computer fear which has been called 'cyberphobia.' Weinberg (1984) found that 30 percent of his sample of managers and college students showed symptoms of stress associated with computers, while 5 percent showed true phobic reactions including nausea, hysteria, vertigo and cold sweats when they were required to deal with computers. Other groups have demonstrated remarkable propensity toward the

machines (James, 1982).

Several factors seem to contribute to how people feel about computers, with age one of the most obvious. Marketers have been quick to target the young as a prime audience for home computers and game software, based on reports that the 12- to 14-year-old age group is the single largest decision-making group in the purchase of these items ("Teens Big Decision Makers," 1984). A Harris poll (1983) found that "computer know-how" is higher among people with one or more schoolchildren at home. Roper found that 4 percent of households nationwide have computers but that 6 percent of households with teen-age children had them (Pollack, 1983). The advertising strategy Texas Instruments Inc. launched in 1983 also points to the influence of children on the home-computer market (Abrams, 1983). The campaign touted computers as educational aids. One of the TV commercials, for example, features a toddler on his father's lap in front of a computer. "He's only three," says an off-camera announcer, and he's already reaching out, seeking and looking to you to point the way." After praising Texas Instrument computers, the announcer concludes with an urgent whisper: "Don't put it off."

The age gap has been noted in users of teletext systems as well. Elton and Carey (1983) reviewed the use of public teletext terminals in WETA's Washington, D.C., field trials, and noted general, strong age-related differences in the ways people approached, reacted to and used teletext. Young males and females (approximately 10 to 30 years old) demonstrated a facility with keypads that was largely absent from the behavior of older individuals (45 and older). They surmised that this difference in the skills of teletext users relates more to the personal experiences of young people with video games and computers in school than to an inherent appeal of electronic text to younger people. Many older people at the public sites commented that the teletext

termina. "must be something new for the kids" once they found out that the terminal was a type of equipment to touch to get new information.

Despite its persistence in popular mythology, there appears to be little evidence to support a division of attitudes towar micro-computers based on gender. Indeed, the growth of computing in an era when gender roles are in transition may allow the field to develop along less sexist lines than other industries. Women have played important roles historically in computer development; as Simons (1981) notes, the first computer programmer was a woman, and women are well-represented in data processing management.

From a review of the research on the diffusion of innovations, (Rogers, 1983) it is clear that education and income are important predictors of positive attitudes toward innovations. Inasmuch as sex and race are correlated with education and income, stereotypes of women and blacks as innovation-fearing non-adopters seem to have some basis in fact. Perhaps in recognition of this, no research seems to have explored the relations between these groups and their attitudes toward computer use.

Diffusion literature also suggests that the trialability of an innovation, which in most cases is related to ability of consumers to try a new product before committing to a major purchase, is an important aspect of adoptive behavior. While empirical support is inconclusive, it appears that less risk is perceived in an innovation that has been made familiar through prior experience. Therefore, we would expect that people who have had the opportunity to (or have been forced to, i.e., some office workers) use computers in their jobs, would be more liikely to have positive attitudes toward the use of computers in their home.

Reviews of numerous diffusion studies also have found that early adopters are less fatalistic than later adopters. Rogers (1983) defines fatalism as

"the degree to which an individual perceives a lack of ability to control his or her future." (p. 258) Coovert and Goldstein (1980), investigating a similar variable, locus of control, i.e., the degree to which an individual feels that they in control of or controlled by their surroundings, found students with an external locus of control thought computers were harmful, and those with an internal locus of control thought them helpful. Their conceptualization was based on the work of Lee (1970) and Cancro and Slotnick (1970), which demonstrated an underlying attitude wherein computers were seen as either tools to be used and appreciated or as mind-controlling entities to be feared. People in control of their lives, the study suggests, tend to feel they can control computers, while others may fear the control computers can exert on them.

Attitude toward computers, then, appears to be the function of a number of psychological and demographic variables. This study seeks to test the relevance of some of these variables in predicting attitudes toward computers. Our working hypothesis predicts that significant differences will be found between groups of varying income and education, as was the case for other innovations. Trialability, in the form of experience with computers, would also be expected to predict a favorable attitude toward computers, and younger people, as well as couples with children, would be expected to share this positive attitude.

We speculated further that some measure of personal control or competence would be an important predictive element, hypothesizing that feelings of control will lead to a greater interest in computers. Since the social structure limits the opportunities in which women and racial minorities have to develop control over their lives, we also predicted that these groups would express less favorable attitudes toward the computer because they are less

likely to feel that they will be able to understand or control this innovation. In short, we expected to find the have-nots -- the old, the poor, the uneducated, the minorities -- to have developed negative attitudes to the very technology that threatens to disenfranchise them from the information age.

In testing these hypotheses we will concentrate first on the demographic variables of sex and race and then will introduce the psychological variable of personal control since it might help explain demographic differences in attitudes toward computers. Further analyses of interactions of the competence variable and other demographic variables, while guided in general by our hypotheses, will be more exploratory in nature, as we work toward a preliminary model of the predictors of positive attitudes toward computers.

SAMPLES

Two statewide telephone surveys of people aged 18 and older living in North Carolina were conducted. The first survey, conducted Oct. 10-20, 1983, included 486 adults. In the second survey, conducted Feb. 17 to March 1, 1984, 568 adults were interviewed.

Random digit dialing was used in both surveys to give every residential telephone in the state an approximately equal chance of being dialed. The number of working residential telephones for each three-digit prefix was estimated on the basis of data supplied by each telephone company operating in the state. Strings of four random digits, confined to working banks where known, were generated by computer to complete the phone numbers. The first number in each string became the sample number. It was replaced by the next number in the string when the number was determined to be non-working or non-residential or was not answered after four attempts at one-hour intervals

or when the respondent refused to be interviewed or no eligible respondent was in the home. When a residential household was reached, the number of persons 18 and over living at that address was determined and a respondent selected by the "next birthday" method. The person in the household whose birthday was next was interviewed as a means of insuring random selection within the household. If the person with the next birthday was not at home a callback appointment was made.

Graduates and advanced undergraduates studying research methods and/or reporting conducted the interviews under supervision by two faculty members. Interviews lasted an average of 12 to 15 minutes.

When compared with the 1980 Census, the 1983 sample underrepresented blacks and persons over 54 by margins slightly greater than sampling error. Persons 54 and over were 30 percent of the voting age population according to the census, but 24.8 percent of the sample. Blacks were 20.6 percent of the population and 14.8 percent of the sample. The sample erred by less than a percentage point on male-female and urban-nonurban distributions.

The 1984 sample underrepresented blacks, males and persons under 30. Blacks were 16 percent of this sample. Males, according to the census, were 48 percent of the population, but 43 percent of the sample. Persons 18 to 29 years old were 29.4 percent of the population, but 24.4 percent of the sample. The sample was less than a percentage point different from census figures for urban-nonurban residence and for persons older than 40.

RESULTS

In the first data set three simple, categorical variables were used to measure attitude toward and experience with computers. In the 1984 survey,

more precise items were designed to measure attitudes toward computers and the psychological control variable--personal competence. We will begin with a brief examination of the 1983 data and then move into a more detailed discussion of the results from the second survey.

In 1983, respondents were asked to report whether they thought computers had done them more harm than good, more good than harm, or made no difference. Table 1 shows the results of that question by respondent's sex. The table indicates that males appear, overall, to feel significantly more positive toward computers than do females. Thus, initially, we seem to find some support for the conventional view that males have a stronger orientation toward computers.

Insert Table 1 Here

We also asked two computer experience questions in 1983. The first question asked whether respondents "had ever had a job that involved using a computer in some way." The second question asked if the respondent had ever had a computer in his or her home. Table 2 shows the results of the computer experience on the job question by sex. Again, there appears to be a significant difference, with males reporting more experience than females. The second experience question was less helpful. Overall, only 34 (6%) of the 586 respondents said they had ever had a computer in the home. There were no significant differences related to sex.

Insert Table 2 Here

The results in the second table suggest that the apparent difference in attitude between males and females (as shown in Table 1) may be related to the fact that females seem less experienced with computers. When the sex-attitude cross-classification, controlling for experience was run, no significant differences between males and females were found in the group that reported having experience. In the non-experienced group, however, we still found that males report a more positive attitude toward computers (Chi-square of 10.07, with 2 degrees of freedom, significant at p=.05). Thus, at this stage, there appears to be a sex-experience interaction, with sex affecting computer attitudes only among the non-experienced.

We also examined the relationship between race (recoded as white and non-white) and the attitude and experience questions. No signficant difference was found in either the main effects tests or in the attitude by race test while controlling for experience.

Thus our preliminary study, while showing somewhat mixed results, tends to disconfirm prevailing notions that positive attitudes toward computers will be found predominantly among white males. We found no initial evidence that respondents' race affected their computer attitude, and we found evidence of a sex difference only among those reporting no experience with computers.

Questions for the 1984 survey were developed so as to allow for a more sophisticated analysis of predictors of attitudes toward computers. First, we decided that the 1983 attitude question, forcing respondents to decide whether computers are helful or harmful, might not be a particularly valid measure. It

is entirely possible, we felt, to think that computers are both helpful and harmful. There may be, in other words, two separate dimensions, positive and negative, of attitude toward computers. The low correlation of the 1984 helpful and harmful items (each measured on a scale from 0 to 10) suggests that these are, indeed, independent dimensions (Pearson's r=-.031, non-significant at p=.05).

Insert Table 3 Here

We added a second, arguably positive, measure of computer attitude -- interest (on a scale from 0 to 10) in buying a computer if the respondent could afford it -- to help sort out the question of dimensionality and to control for measurement error. Table 3 shows two factor analyses used to check dimensionality and to create a computer attitude index. The first analysis, while generating only a single factor, still provides strong evidence that the harmfulness question measures something different from what is measured by the helpfulness and interest questions (the harmfulness question loaded at -.17, while both the helpfulness question and the interest question loaded at better than .58). In other words, there do appear to be two separate dimensions -- positive and negative -- of computer attitude. Thus we removed the harmfulness question and ran the second analysis shown in Table 3. Factor scoring coefficients from this analysis were used to create a new variable, Computer Attitude, which we consider to be an index of the positive attitude dimension. Further analysis will deal only with this new variable. The harmful attitude item was dropped at this point both because we had not developed hypotheses

regarding it and because we had no way of controlling for possible measurement error in it. (Note 1)

The demographic measures included in the second survey were: income (a six-point scale ranging from less than $10,000 to more than $30,000), race (a dummy variable coded 0 for non-whites), sex (a dummy variable coded 0 for females), age (a continuous variable starting at 18), education (a six-point scale ranging from 0-8 years to post-graduate work) and whether or not the respondent has children (a dummy variable coded 0 if no). Respondents also were asked if they had ever used a computer at home or at work. This measure of computer experience was entered in the equations as a dummy variable coded 0 for non-experienced. In this sample, 39 percent reported having used a computer at home or at work.

The psychological variable, personal competence -- a feeling of mastery over the self and the environment-- was measured with an item taken from a three-item set developed by Campbell et al (1960) which consistently have been found to be related to political attitudes and activity and which is theoretically closely related to the concepts of ego-strength and internal locus of control. Respondents were asked: "Have you usually felt pretty sure your life would work out the way you want it to, or have there been times when you haven't been very sure about it?" This measure of personal competence was entered in the equations as a dummy variable coded 0 if the respondent reported non-competence, i.e., not sure their life would work out the way they wanted it to (49% of the sample).

Table 4 shows four equations in which Computer Attitude was regressed on these variables and interactions among these variables.

Insert Table 4 Here

Equation A in Table 4 tests only the main effects of the predictor variables. Note that all main effects, except sex and education, are significant. As hypothesized, income, computer experience and having children are all positive predictors of computer attitude in the main effects model (people with higher income, computer experience and children have more positive attitudes toward computers). Likewise, age, as a main effect, predicts in the hypothesized negative direction (younger people have a more positive attitude toward computers). The regression coefficients for race and personal competence, however, were counterhypothetical. In terms of main effects, being white and feeling competent both predicted negatively to computer attitude.

To try to sort out these unexpected results, we then calculated the regression of computer attitude on the main effects plus interactions between each main effect and personal competence. (Interaction terms were created from cross-products of the variables in question.) The results are shown in Equation B of Table 4. Only two variables were found to interact significantly with personal competence: income and education. Equation C of Table 4 shows the more parsimonious model, with non-significant interactions in Equation B removed from the model. (Note 2).

In Equation C, race, experience, age and having children are still significant as main effects. Personal competence loses its significance as a main effect when allowed to interact with income and education. Income also loses its significance as a main effect. Education, on the other hand, becomes a significant positive predictor of computer attitude when allowed to interact

with personal competence.

Insert Figure 1 Here

Interactions are most easily understood when represented graphically. Figures 1 and 2 chart the effects of the interactions in Equation 3, using a technique suggested by Marsden (1981). In Figure 1 we see that income is a positive predictor of computer attitude only for respondents who report feeling competent. Among the non-competent respondents, income appears to have a slight negative effect. This suggests, then, that income, by itself, may not be a good predictor of computer attitude.

Insert Figure 2 Here

Figure 2 represents the interaction between education and personal competence. It is interesting to note that this interaction is nearly the reverse of the income-competence interaction. In this case, education is a fairly strong positive predictor of computer attitude for those respondents reporting a lack of personal competence. For the competent group, however, education has a negative effect. So, while education appears to have a significant main effect, it would be naive to attempt an examination of the effect of education without taking personal competence into account. Indeed, had we failed to test for interaction, we would have been misled into believing

that education has no effect.

Equation C helps to clarify some of the apparent relationships found in Equation A, but the counterhypothetical effect of race remains perplexing. There was no race-competence interaction, so we sought other explanations for the finding that being white apparently decreases the likelihood of a positive attitude toward computers. Four explanations are plausible. First, perhaps more non-whites in the sample have children than do whites. The strong positive effect of having children could thus make non-whites appear, artifactually, to feel more positive about computers. The coefficient for race could be an artifact of a race-income interaction. A race-education interaction or a race-age interaction are also possible explanations. We tested each of these four interactions separately, to see how much each added to the variance explained in Equation C. Only the race-age and the race-income interaction were significant. The final model, which has the most predictive power (R squared = .325), is presented as Equation D of Table 4.

Insert Figure 3 Here

The significant main effects in the final model are income, computer experience, education and having children. All are positive predictors. It is noteworthy that the addition of the race/income and race-age interactions restored the significance of income as a main effect, but removed race as a main effect, changing the sign of the coefficient in the process. Figure 3 shows the joint interactive effects of competence, income and race. Income is strongest as a positive predictor in the competent non-white group, but it

predicts postively for non-whites at both levels of competence. Income is also a positive predictor for competent white respondents, but predicts slightly negatively for non-competent whites. Thus, overall, income is a fairly good predictor of attitude toward computers, but its power varies from group to group, depending upon both race and feelings of personal competence. The negative slope for the non-competent whites may account both for the seeming non-significance of income (main effect) in Equation C and for the apparent negative effect of being white in Equations A and C.

Insert Figure 4 Here

Figure 4 illustrates the personal competence/education interaction, controlling for race. The information here basically replicates the finding in Figure 2. Education appears to have equally positive predictive power for non-competent respondents, regardless of race. Likewise, education seems to predict a decrease in positive feelings about computers for competent respondents, whether they are white or not.

Insert Figure 5 Here

Figure 5 shows the race/age interaction, controlling for feelings of personal competence. Age appears to predict negatively to computer attitude for both racial groups, but the decreasing slope is more dramatic for non-whites than for whites. This interaction is not affected by personal

competence.

Any explanation of these interactions must, naturally, be somewhat speculative. The most interesting, and most complex, set of interactions occurs among race, income and personal competence (see Figure 3). The predominant variable here seems to be income, which predicts an increase in positive computer attitude in every group but one. This suggests that cost may still be an inhibiting factor in diffusion of micro-computers. As prices of personal computers continue to decline, income may lose some of its predictive power. The race differences in Figure 3 are also interesting. Overall, non-whites still appear to feel slightly more favorable toward computers than do whites. The negative effect of being white and feeling non-competent requires further investigation.

The personal competence/education interaction (see Figure 4) might be explained by differences in feelings of personal competence within the groups. In other words, regardless of which group a subject is in, feelings of personal competence should increase with education. As members of the non-competent group begin to feel a greater sense of control, with greater education, they may begin to feel more positive toward computers as a source of competence and control. At the same time, as members of the competent group become more educated, their sense of competence also increases. More and more, they begin to view computers simply as tools to use in performing certain essential tasks. They still feel positive toward computers, but are not as excited about them as are people who feel competent but have less education, or people who don't feel competent, but are highly educated. The latter two groups would feel more favorably toward computers because they would have more to gain from the new technolgies.

The race/age interaction is difficult to explain (see Figure 5). Age works

in the expected direction for both racial groups, but the decline in interest is more dramatic among non-whites. It is interesting that this does not appear to be related to feelings of personal competence. The interaction may be due to a lack of exposure to, or experience with, computers among older non-whites. Further analysis, controlling for experience, is needed to sort out the possible explanations for this interaction.

CONCLUSIONS

Thus we have found that accurate prediction of attitude toward computers depends upon decomposition of a complicated set of interactions among demographic and psychological variables. Cursory examination of main effects could be highly misleading for scholars of the new technologies, for those who are attempting to define the market for microelectronic products and for educators, parents and others who are attempting to decide who should, or should not, have computer access priority. Suggestions that certain demographic groups are more or less cyberphobic or 'cyberphilic' tend to over-simplify a complex set of relationships. Such over-simplification may take a dangerous twist if it is applied excessively to marketing, advertising and planning. It seem possible that we run the risk of perpetuating demographic stereotypes in an area where none are now clearly discernible.

These analyses do suggest that women and non-whites may not be left out of the information society — at least not by choice. We predicted that women, non-whites and older people would have less positive attitudes toward computers because they would be less likely to feel competent to use the innovation. We have found, however, that those who report feeling a lack of personal competence are most likely to have positive attitudes toward computers. It may

be that these people have come to see computers as a potential mechanism for increasing their roles and influence in society.

Perhaps 10 years ago, when computers were less "user friendly," and, in fact, required a great deal of skill to use and understand, we would have found that feelings of incompetence were related to less positive attitudes toward computers. Now Charlie Chaplin shows us how effortless it is to use a computer and suggests that every home needs one. Other advertising campaigns are designed to make parents feel guilty if they are depriving their children of this new educational device. Apparently these approaches are working, and, rather than being scared by another incomprehensible technological device, those who lack feelings of competence are prepared to let the computer make them more competent.

The ability to pay for computers still appears to be an impediment to widespread diffusion. In 1983 only 6.2 percent of our sample reported ever having had a computer in their home. We would expect that as prices come down, this percentage will increase dramatically, but it is unclear at this point how soon this will happen and exactly how far the prices will fall.

At the same time, it is not clear what people will use these computers for. In our sample, of those who had had a computer in their home, 81 percent said they had played games with them while only about one-third (36 percent) had written their own programs and only 19 percent had used the computer to send or receive information. If not having a computer means not being able to play games, then what does it matter who has one? The futurists speak rather of computers increasing the probability for participatory democracy through community networking (Mosco, 1983) and the ability to access information. Are these the uses to which computers will actually be put? Or will the traditional dividing lines between the haves and the have-nots only be

perpetuated? Women, for example, while moving into dominant positions in the field of computer programming, may be left out of the business of designing computer architecture, which may turn out to be the more important part of the enterprise (Baum, 1982).

Similarly, Toffler's optimistic vision of the electronic cottage may turn out to be another instance of increased intrusion of the workplace into private time and space rather than a freeing from the constraints of a structured work environment. To this point, electronic cottage industries have meant women sitting in front of terminals, doing mindless, boring work for minimum wage without benefits (Mattera, 1983).

Adoption of personal computers is the primary communications issue of the 1980s. Those traditionally on the perimeter of the diffusion process are showing interest in adopting this technology. As a society, we are in a position to ensure that they are equitably included in the development of an innovation that still has positive potential.

Notes

1. Using the formula (Heise and Bohrnstedt, 1970):

$$\Omega = 1 - \frac{\sum_{i=1}^{n} \sigma_i^2 - \Sigma \sigma_i^2 h_i^2}{\sum_{i=1}^{n} \sum_{j=1}^{n} \text{cov.}(x_i, x_j)}$$

Where:
- Ω = The measure of reliability
- σ_i^2 = Sample variance of the ith index item
- h_i^2 = Communality of the ith index item
- $\text{Cov.}(x_i, x_j)$ = The sample covariance of the ith and jth index items

a reliability of .27 is obtained for the Computer Attitude index. This is low, and probably due to having only two items in the index.

2. Zero-order correlations among the variables tested for main effects are presented in Appendix A. Judging from some of the high correlations among these variables, it is possible that multicollinearity may be a problem. There is, of course, always a high correlation between interaction terms and the main effects variables from which they are produced as cross-products. While our analyses of interactions are exploratory at this point, future analyses could address the problem of correlations among main effects by more precise prior specification of paths of causation (e.g., education and age predict experience which predicts attitude).

Appendix 1
Zero-order Correlations Among Main Effects Variables

	Children	Income	Competence	Race	Sex	Exper.	Age
Children	1.000						
Income	.020	1.000					
Competence	.024	.211*	1.000				
Race	036	.210*	.044	1.000			
Sex	-.058	.235*	.090*	.136*	1.000		
Experience	-.157*	.318*	.011	-.011	.131*	1.000	
Age	.379*	-.208*	.146*	.087*	-.029	-.335*	1.000
Education	-.143*	.461*	.086*	.071*	.126*	.413*	-.258*

*significant at $p. \leq .05$

Table 1
Computer Attitude by Sex
1983 Data Set

Count Column Percent	Male	Female	Row Total
More Harm Than Good	13%	17%	15%
No Difference	26	38	32
More Good Than Harm	61	45	53
Total	48%	52%	100%
(n)	280	300	580

Chi-Square of 15.37 at 2 degrees of freedom, significant at p=.05.

Table 2
Computer Use at Work by Sex
1983 Data Set

HAD A JOB THAT INVOLVED USING A COMPUTER?	SEX Male	Female	Row Total
Yes	37%	27%	32%
No	63	73	68
Total	49%	51%	100%
(n)	(282)	(300)	(582)

Chi-Square of 5.73 at 1 degree of freedom, significant at p=.05.

Table 3
Factor Analyses Used To Create Computer Attitude Index
1984 Data Set
(Principal Components Technique)

Analysis 1 -- All three measures

	Factor
How Helpful Are Computers?	.5802
How Harmful Are Computers?	-.1737
Interest in Buying a Computer	.5924
Eigenvalue	1.39

Analysis 2 -- Harm variable removed

	Factor
How Helpful Are Computers	.6028
Interest in Buying a Computer	.6028
Eigenvalue	1.38

Table 4
Four Regression Models with Computer Attitude as the Dependent Variable
1984 Data Set

Equation	A	B	C	D
R-Square	.298**	.314**	.309**	.325**
Children	.794*	1.092*	.801*	.836*
	(.092)	(.126)	(.092)	(.097)
Income	.216*	-.040	-.048	.630*
	(.105)	(-.020)	(-.024)	(.308)
Personal Competence	-.650*	-1.081	-.448	-.600
	(-.086)	(-.143)	(-.059)	(-.080)
Race	-1.715*	-1.754*	-1.770*	2.432
	(-.175)	(-.179)	(-.180)	(.247)
Sex	-.209	-.213		
	(-.027)	(-.028)		
Computer Experience	1.804*	1.308*	1.688*	1.740*
	(.233)	(.169)	(.218)	(.225)
Age	-.070*	-.079*	-.067*	-.028
	(-.32:)	(-.361)	(-.308)	(-.128)
Education	.157	.544*	.496*	.513*
	(.055)	(.192)	(.175)	(.181)
Children/Competence		-.576		
Income/Competence		.515*	.507*	.574*
		(.320)	(.314)	(.356)
Race/Competence		.139		
Sex/Competence		-.167		
Experience/Competence		.799		
Age/Competence		.022		
Education/Competence		-.678*	-.604*	-.645*
		(-.356)	(-.317)	(-.339)
Race/Age				-.046*
				(-.280)
Race/Income				-.800*
				(-.471)
Intercept	9.04	9.00	8.71	5.14

Note: Numbers in parentheses are standardized regression coefficients. All other coefficients are unstandardized. (N=500)

** F test significant at p=.05.
* t-test significant at p=.05.

FIGURE 1

Personal Competence-Income Interaction
Equation C
(Holding all else constant at zero)

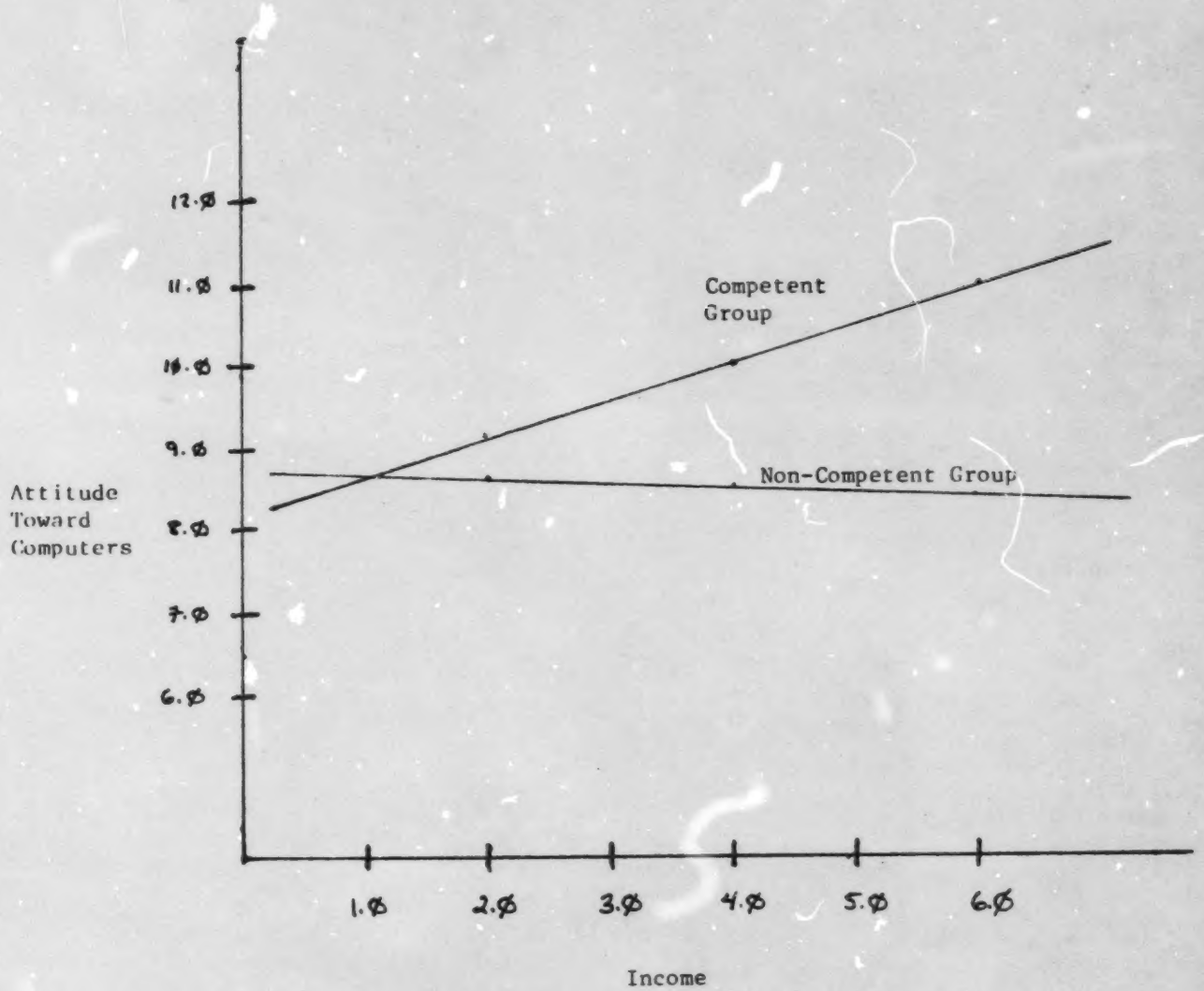


FIGURE 2

Personal Competence-Education Interaction
Equation C
(Holding all else constant at zero)

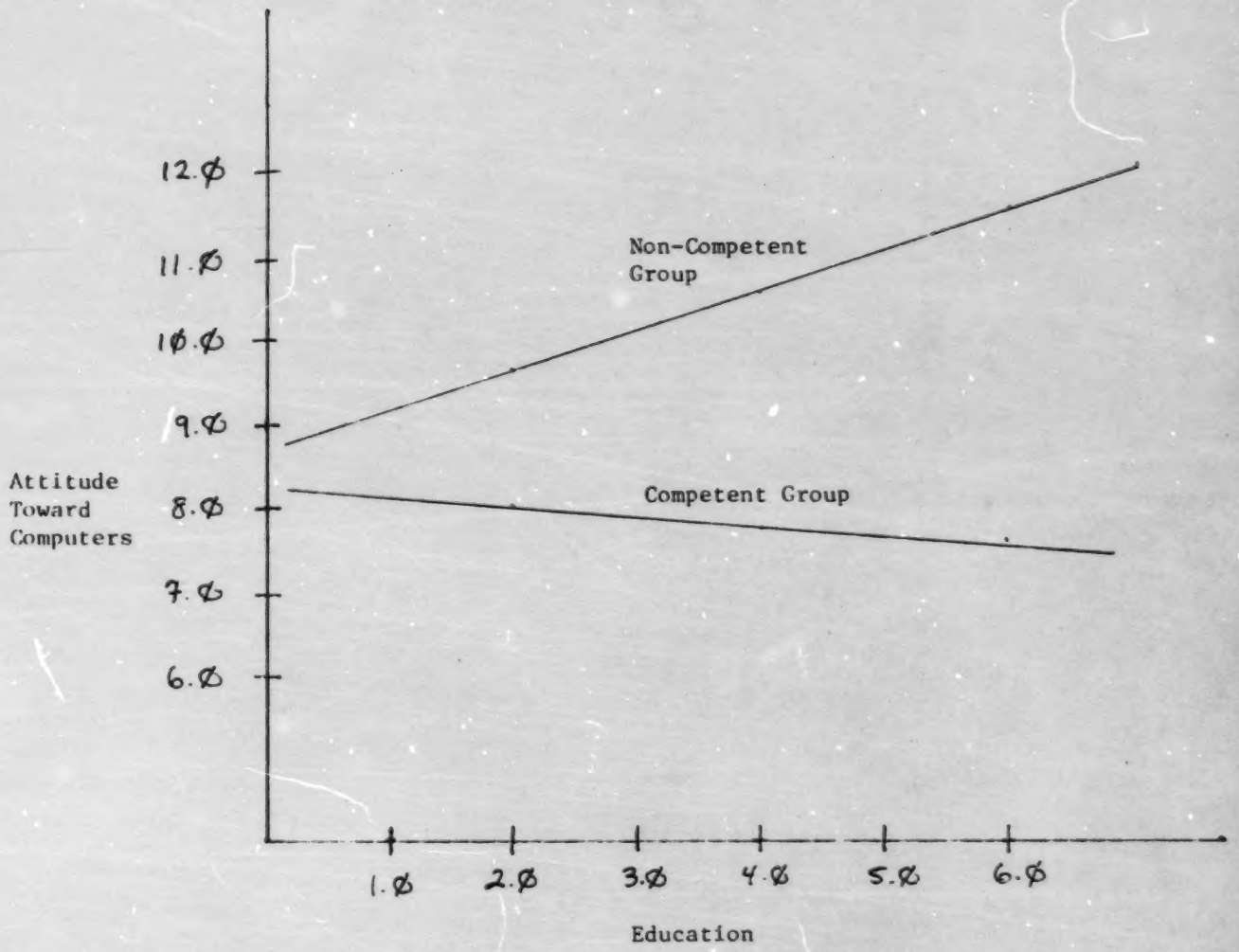
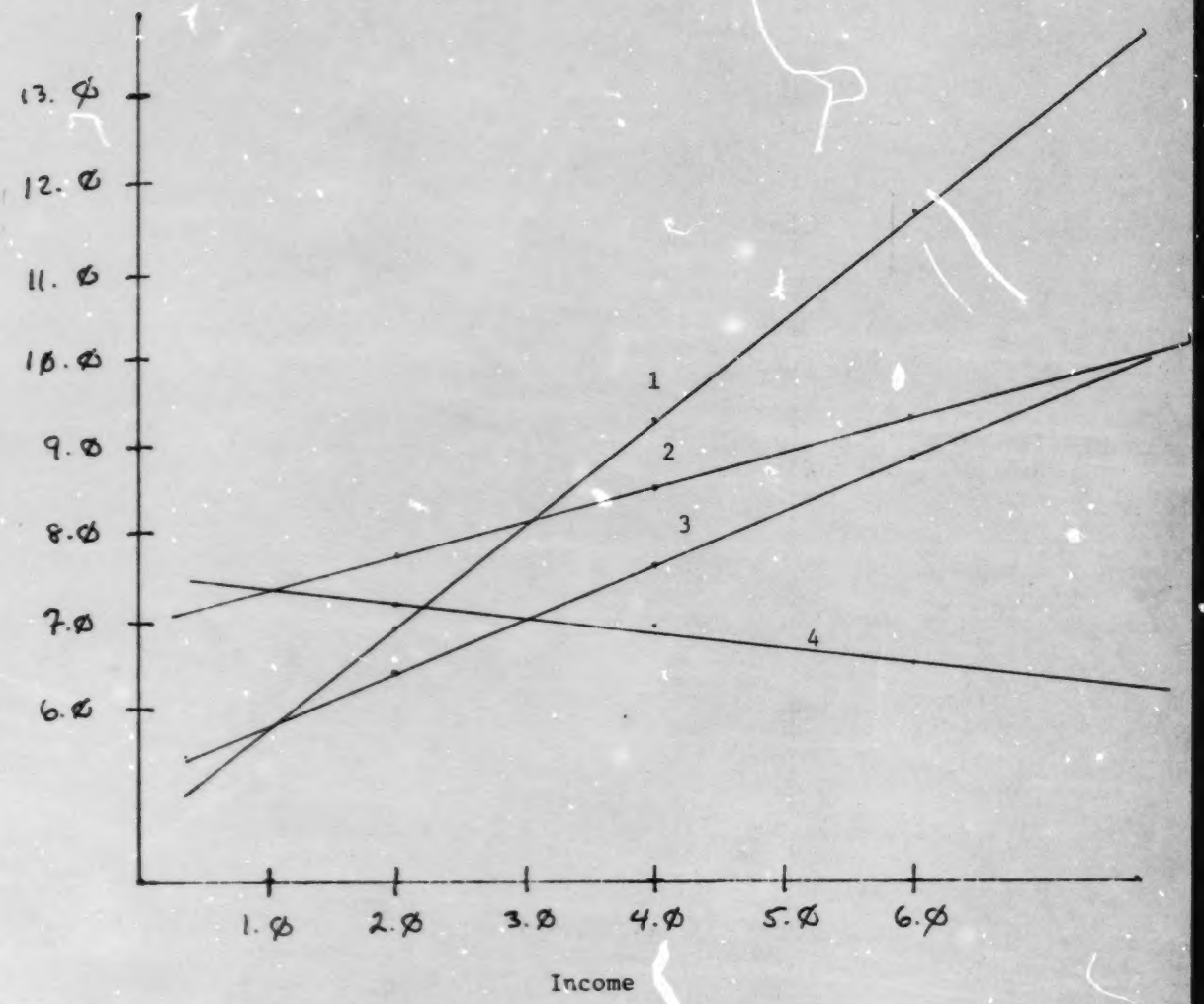


FIGURE 3

Personal Competence-Income Interation
with
Race-Income Interaction
Equation D
(Holding all else constant at zero)



Attitude Toward Computers

1 = Competent Non-white Group
2 = Competent White Group
3 = Non-Competent Non-White Group
4 = Non-Competent White Group

FIGURE 4

Personal Competence-Education Interaction
Controlling for Race
Equation D
(Holding all else constant at zero)

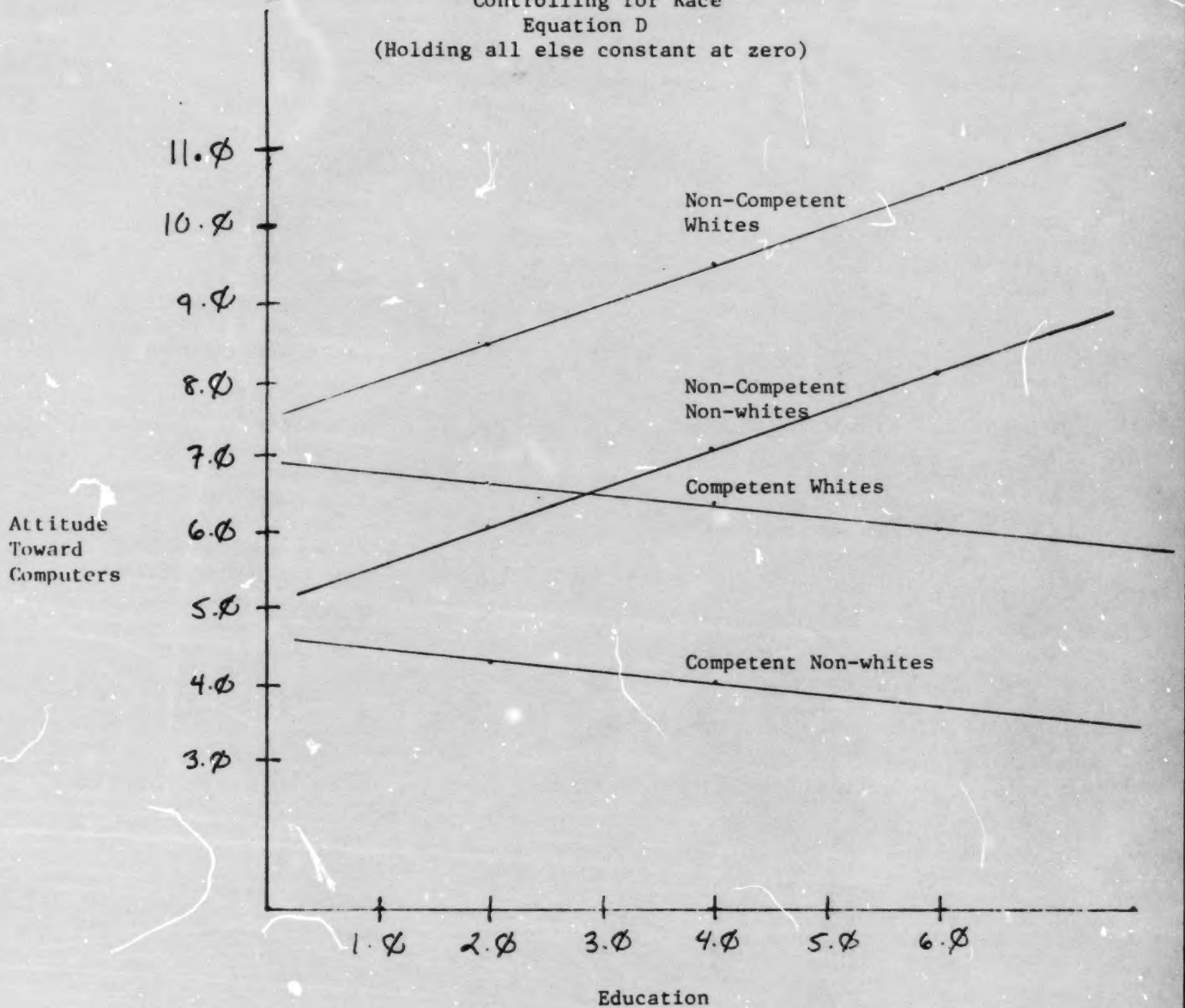
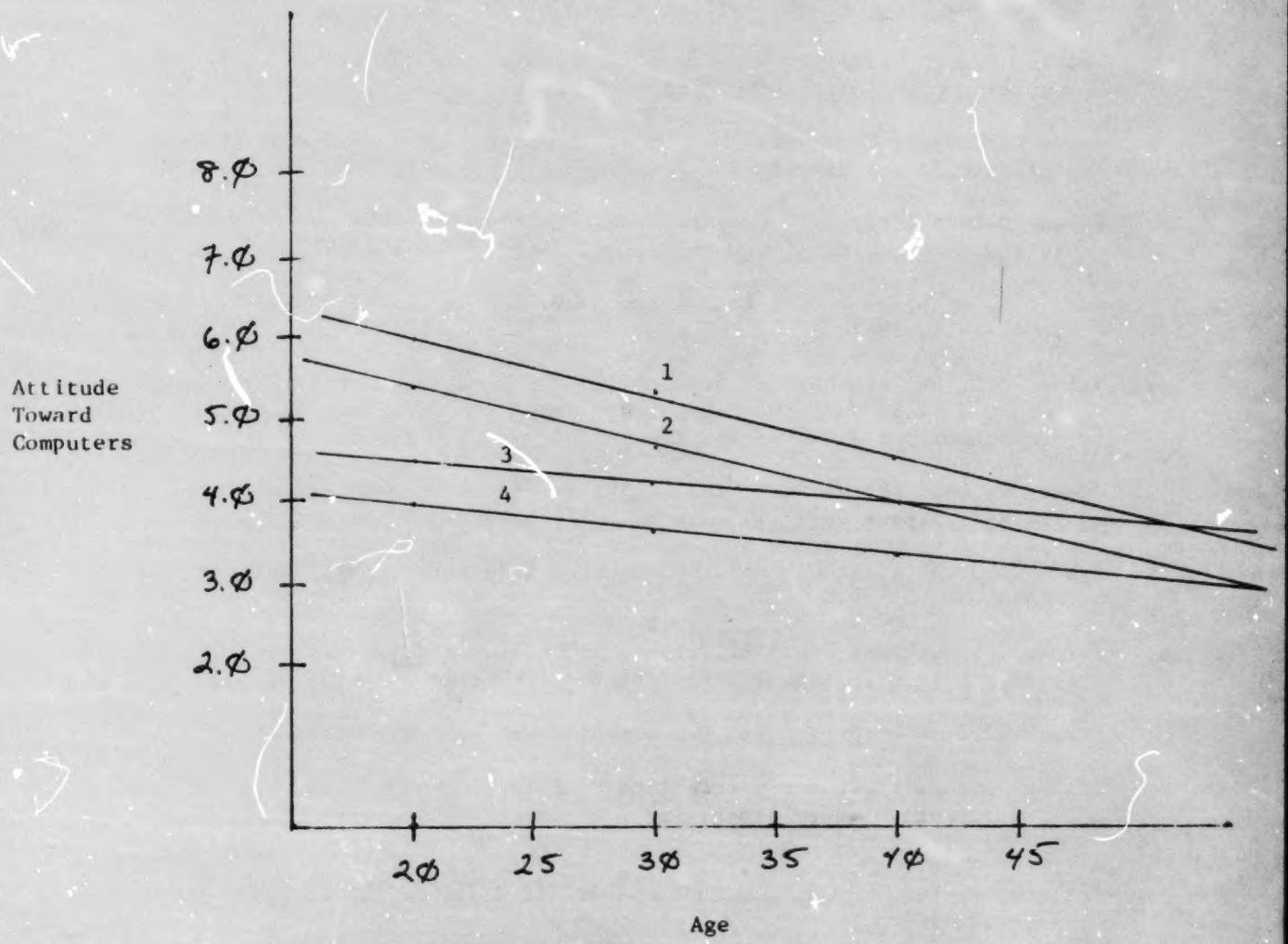


FIGURE 5

Race-Age Interaction
Controlling for Personal Competence
Equation D
(Holding all else constant at zero)



1 = Non-competent White Group
2 = Competent White Group
3 = Non-competent Non-white Group
4 = Competent Non-white Group

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